



Docket No.: 2870-0177P  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:  
**Tetsuo YAMAGUCHI**

Application No.: 10/046,141

Confirmation No.: 3642

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Art Unit: 1752

For: **PHOTOTHERMOGRAPHIC MATERIAL**

Examiner: T. Chea

**DECLARATION UNDER 37 C.F.R. §1.132**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

I, Tetsuo YAMAGUCHI, a Japanese citizen, having a post office address of c/o FUJIFILM Corporation, No. 210, Nakanuma Minami-ashigara-shi, Kanagawa 250-0193 Japan, hereby declare and state that I received a Master's Degree from Tokyo University, Faculty of Engineering in March of 1988. I was employed by Fuji Photo Film Co., Ltd. (now FUJIFILM Corporation) in April of 1988 and since that time I have been principally engaged in research and development of photosensitive materials in the research laboratories of said company.

I declare further that I am the inventor of the above-identified application and I have read all of the documents contained in the file wrapper of the above-entitled application.

I also declare that my education and experience qualify me as one of skill in the field of photosensitive materials.

I declare further that the test described below was conducted at my direction and under my supervision and the test results are true and correct to the best of my knowledge.

**EXPERIMENT AND RESULTS**

Sample 3 of Ito et al., U. S. Patent No. 6,150,084 (Ito '084) was prepared by the procedure set forth in the patent and the prepared sample is referred to as Sample A-1 hereafter. Samples A-2 to A-10 were prepared in the same manner as Sample A-1 except that the compounds shown in the table below were used additionally. The compounds of the present invention were added in  $4.5 \times 10^{-3}$  mol/Ag (1 mol), which is the same amount as used in Ito '084 (see Table 23). The compound of formula (I) was added in 0.001 g/Ag (1 mol). These samples were evaluated in the same manner as described in Example 1 of the present specification.

Results are shown in the following Table 1.

Table 1

| Sample No. | Compound of the Present Invention | Compound of Formula (I) | Developed silver grain density (%) | Covering Power (%) | Dmin | Dmax | Sensitivity | $\gamma$ | Dmin (after leaving) | Note                                   |
|------------|-----------------------------------|-------------------------|------------------------------------|--------------------|------|------|-------------|----------|----------------------|--|
| A-1        | -                                 | -                       | 100                                | 100                | 0.10 | 1.7  | 0.70        | 2        | 0.17                 | Comparative<br>(Sample 3 of Ito '084)  |
| A-2        | -                                 | Compound 95 of JP '136  | 100                                | 100                | 0.10 | 1.7  | 0.75        | 2        | 0.17                 | Comparative<br>(Sample 3 of Ito '084)  |
| A-3        | C-1 of Ito '084                   | -                       | 1400                               | 230                | 0.11 | 3.7  | 1.00        | 14       | 0.22                 | Comparative<br>(Sample 7 of Ito '084)  |
| A-4        | C-1 of Ito '084                   | Compound 95 of JP '136  | 1400                               | 230                | 0.11 | 3.8  | 1.25        | 15       | 0.16                 | Invention                              |
| A-5        | C-42 of Ito '084                  | -                       | 1400                               | 220                | 0.11 | 3.7  | 0.95        | 14       | 0.21                 | Comparative<br>(Sample 11 of Ito '084) |
| A-6        | C-42 of Ito '084                  | Compound 95 of JP '136  | 1400                               | 220                | 0.12 | 3.8  | 1.20        | 15       | 0.16                 | Invention                              |
| A-7        | C-8 of Ito '084                   | -                       | 1400                               | 230                | 0.12 | 3.7  | 0.95        | 14       | 0.21                 | Comparative<br>(Sample 15 of Ito '084) |
| A-8        | C-8 of Ito '084                   | Compound 95 of JP '136  | 1400                               | 230                | 0.11 | 3.7  | 1.20        | 15       | 0.16                 | Invention                              |
| A-9        | C-57 of Ito '084                  | -                       | 1300                               | 220                | 0.12 | 3.7  | 1.00        | 14       | 0.22                 | Comparative<br>(Sample 19 of Ito '084) |
| A-10       | C-57 of Ito '084                  | Compound 95 of JP '136  | 1300                               | 220                | 0.12 | 3.8  | 1.20        | 15       | 0.16                 | Invention                              |

Note: "Compound of the Present Invention" denotes a compound that has a formula (1), (2) or (3) of Claim 1 and characteristics satisfying at least one of (i) to (iii) of Claim 1.

DISCUSSION

Ito '084 discloses photothermographic materials containing Compounds C-1, C-42, C-8 or C-57 but fails to disclose compounds of formula (I). Reviewing the above Table 1, it is evident that Sample A-1 corresponds to Sample 3 of Ito '084. Sample A-1 was prepared using the materials and procedures of Sample 3 of Ito '084 and thus represents a true replication thereof. Sample A-2 differs by the addition of Compound 95 of JP '136 and Sample A-3 differs by the addition of Compound C-1 of Ito '084. The amounts of Compound C-1 in the samples are the same as the amounts suggested by Ito '084, for instance, Applicants refer to Samples 5-8 of Ito '084 as shown in Table 23, wherein the added amount was  $4.5 \times 10^{-3}$  mol/Ag. Each of the above Samples thus represents a proper comparative showing. Therefore, in the present instance I have used the materials and methods of the primary reference of Ito '084 as a starting point for the comparative showing. As for the Inventive samples, Sample A-4 combines both Compound 95 of JP '136 and Compound C-1 of Ito '084 in the same amounts as individually present in Samples A-2 and A-3, respectively.

The above Table 1 shows that Samples A-3, A-5, A-7 and A-9 representing the invention of Ito '084 exhibit poor sensitivity and high fog after leaving.

Samples A-4, A-6, A-8 and A-10, that correspond to Samples A-3, A-5, A-7 and A-9, respectively, contain a compound of formula (I) additionally. It is clear from Table 1 that the former samples exhibit higher sensitivity and lower fog after leaving than the latter samples. The difference is significant. It can be concluded that high sensitivity and low fog after leaving can be achieved by using a compound of the present invention and a compound of formula (I) in combination.

Thus, it is shown that the claimed combination can only achieve low fog, high Dmax, improved sensitivity and high contrast.

I believe that no one skilled in the art would have been motivated to select the compounds of the present invention among the various compounds exemplified in Ito '084 and then combine the selected compounds with compounds of formula (I) in order to attain low fog, high Dmax, improved sensitivity and high contrast, before the claimed invention was made. I also believe that no one skilled in the art could have predicted that the claimed combination actually produces low fog, high Dmax, improved sensitivity and high contrast, before the claimed invention was made. I therefore trust that the claimed invention is patentable.

I also take this opportunity to discuss the results for Dmin (after leaving) in particular. The addition of Compound 95 to Sample A-1 (resulting in Sample A-2) did not result in a change in Dmin (after leaving). Thus, it would be expected that addition of Compound 95 to another Sample would not influence Dmin (after leaving). However, as shown in the above Table 1, the addition of Compound C-1 to Sample A-1 (resulting in Sample A-3) resulted in an increase in Dmin (after leaving) of 0.05. Thus, cumulatively, if both Compound 95 and Compound C-1 are combined (resulting in Sample A-4), there would be an expected increase in Dmin (after leaving) of 0.05 compared to Sample A-1. However, the actual result was a decrease of 0.01 (-0.01). This is a superior Dmin (after leaving) and unexpected in view of the cited references.

Additionally, the declarative evidence further demonstrates that the increase in sensitivity of Sample A-4 is much higher than the calculated value based on the increase in sensitivity of Sample A-2 and Sample A-3. Moreover, the increase in Dmax of Sample A-4 is higher than the calculated value by 0.1 and the increase in gamma of Sample A-4 is higher than the calculated

value by 1, even though Compound 95 shows no effect on Dmax and gamma. Therefore, these results further demonstrate that the present invention exhibits unexpectedly superior results compared to the cited art.

To further aid in interpreting the results of the above Table 1, the following Table 2 is provided. Table 2 illustrates the delta ( $\Delta$ ) results for Dmin, Dmax, Sensitivity, gamma and Dmin (after leaving) for each of Sample A-2, A-3 and A-4 compared to Sample A-1. Table 2 aids in a better visualization of the unexpectedly superior results according to the present invention. For instance, based upon the design of the Comparative experiments, the  $\Delta$  for Sample A-4 compared to Sample A-1 would be “expected” to be the additive results of the  $\Delta$  for Sample A-2 and Sample A-3. However, it is evident that this is not the case. Rather, the results achieved by Sample A-4 are unexpectedly superior to the results which might have hypothetically been predicted.

Results are shown in the following Table 2.

Table 2

| Sample No.   | Compound of the Present Invention or Comparative Compound | Compound of Formula (I) | $\Delta D_{min}$ | $\Delta D_{max}$ | $\Delta$ Sensitivity | $\Delta \gamma$ | $\Delta D_{min}$ (after leaving) | Note        |
|--|---|-------------------------|------------------|------------------|----------------------|-----------------|----------------------------------|-------------|
| A-1  | -   | -                       |                  |                  |                      |                 |                                  | Comparative |
| A-2  | -   | Compound 95 of JP '136  | 0.00             | 0.00             | 0.05                 | 0               | 0.00                             | Comparative |
| A-3  | C-1 of Ito '084   | -                       | 0.01             | 2.0              | 0.30                 | 12              | 0.05                             | Comparative |
| A-4  | C-1 of Ito '084   | Compound 95 of JP '136  | 0.01             | 2.1              | 0.55                 | 13              | -0.01                            | Invention   |
| Calculated Value [ $\Delta (A-2) + \Delta (A-3)$ ] |   | 0.01                    | 2.0              | 0.35             | 12                   | 0.05            | -                                |             |

I believe that no one skilled in the art would have been motivated to select the compounds of the present invention among the various compounds exemplified in Ito '084 and then combine the selected compounds with compounds of formula (I) in order to attain the superior Dmin (after leaving), sensitivity, Dmax and gamma before the claimed invention was made. I also believe that no one skilled in the art could have predicted that the claimed combination actually produces superior Dmin (after leaving), sensitivity, Dmax and gamma before the claimed invention was made. For these additional reasons, I therefore trust that the claimed invention is patentable.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States *Code* and that such willful false statements may jeopardize the validity of the application of any patent issuing thereon.

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*Tetsuo Yamaguchi*

Tetsuo YAMAGUCHI

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*June 15, 2007*

Date